The Northwestern MILLER

MILLING PRODUCTION SECTION

# Modernization, New Machines, Methods Keynotes of Dallas AOM Conference

By George E. Swarbreck and Paul L. Dittemore

Northwestern Miller Editorial Staff

## NEAR-RECORD ATTENDANCE

**DALLAS—A near record total of more than 760 operative millers, allied tradesmen and their wives attended the 60th annual technical conference of the Association of Operative Millers at Dallas, May 6-10. Last year's attendance at St. Louis was in the region of 740. Noteworthy was the appearance of many overseas visitors, many of whom participated in the program. The exhibits attracted wide attention and the millers took advantage of the intermissions to study the latest offerings of the supply firms. A wide variety of information was offered by allied trade speakers and there was great interest in details of new machines, which after the explanations by firm representatives, were available for inspection and demonstration in the booths. The accent was on modernization; the operative millers used the conference to prepare themselves for all that may be asked of them by their managements when the time comes to rehabilitate their particular plants.**

**Reports of the earlier sessions appeared in The Northwestern Miller for May 8 and 15.**

## Miller Describes Pneumatic Change In Old Plant

Some of the problems connected with the conversion of a present day mill to the use of pneumatic conveying equipment and a detailed recitation of the actual conversion were presented by Douglas Paterson of Ellison Milling and Elevator Co., Lethbridge, Alta., and James T. Wimbush, chief engineer, Kipp-Kelly Ltd., Winnipeg, Man. The work was done by Thomas Robinson & Son, Ltd., Rochdale, England, in association with Kipp-Kelly.

The jointly presented report left no doubt in the minds of the milling technologists that installation of pneumatic materials handling equipment did not entail the need for purchasing new roll stands, new sifters, or a large capital outlay for supplemental equipment.

Mr. Paterson said that included in a changeover were, first, installation of new Robinson purifiers, secondly the increase in the mill's capacity from 2,200 cwt. to between 2,800 and 3,000 cwt. capacity a day; thirdly, a revamping of the mill flow to permit as much flexibility as possible in the production of a fairly complete line of cereal products and, fourthly, installation of a bulk flour storage system.

Mr. Paterson said that the sifters in the mill are between 35 and 40 years old and one of the jobs connected with the modernization program was to rebuild the sifters and to convert them to roller bearings from their old sleeve-bearing setup. He said that the sifters were equipped with new rectangular sieve frames which were built in the mill's own shop and that they were able to increase the bolting capacity of the sifters by the use of a rectangular sifter frame designed and built in their own shop.

Another improvement made in the appearance of the old mill was the construction, also in the mill shop, of cabinets or housing of a uniform height to mount on the different types and sizes of roll stands on the roll floor in the mill. He told the millers

(Continued on page 5a)

### K-State Feed School

Prof. E. P. Farrell of the department of flour and feed milling industries at Kansas State College gave a description of the feed technology building at the college. He said that the building was equipped and installed through the generosity of feed milling companies, ingredient suppliers, machinery manufacturers and other interested parties throughout the country. "The idea was conceived by feed milling men, designed by feed milling men and paid for by the trade," he said.

The aim of the department is to teach the student how each machine is built and how it works. Principles and theory are given equal importance and all students have a chance to gain some practical experience, Prof. Farrell related. Courses in flow sheets, flour mill construction and feed analysis are among the many offered at the school.

### Cleaning Important

Dr. Heinz Gehle, MIAG, Germany, presented a paper on good cleaning through combined air and water washing. It was read on his behalf by Ernest Auer of the MIAG staff. "Well cleaned is half the grinding" was the theme of his talk. Proper cleaning is of the utmost importance in obtaining the best products. It is important to have the bran in flakes of uniform size in order to clean out the endosperms as much as possible. Good conditioning gives a desirable soft and elastic bran.

Mr. Auer said that the system of pneumatic conveying and cleaning allows the grain to be washed with water and to have constant washing with air during the cleaning process. By this the dust and dirt accumulations in the creases are removed thoroughly, because it can be reached only by friction of the kernels themselves. Since the ash content of flour is an important indication of quality and most of the flour trade is based on ash standards, very extensive research during recent years has brought forth considerable improvement. The paper proceeded to show how good cleaning can be accomplished using modern methods and equipment.

### Roll Corrugations

In principle, said Frank Heide, vice president MIAG Northamerica, Inc., presenting an illustrated paper on roll currugations, the flour milling industries in the U.S. and in Europe employ the same machines for the production of flour. Nevertheless, he said, a basic difference in one of the most important processing functions must be acknowledged. This is the practice of corrugating the grinding rolls and the use of corrugation for grinding the grain. The operative miller has to consider both the type of corrugation and the type

(Continued on page 12a)

## Applying European Methods to U.S. Milling Systems

Because of the growing use of European machinery in North American mills, the operative millers showed considerable interest in a presentation by C. Rudolph Moor, Buhler Bros.' Canadian manager, dealing with the application of European milling principles to American mills in order to give improved performance.

The differences between the milling industries of the two continents were highlighted by an account of the impressions of a group of Japanese millers which visited mills in both North America and Europe.

These millers, Mr. Moor said, found that American mills usually have large elevators with modern loading and unloading installations. They were impressed with the large warehouses equipped with modern packing equipment and with good handling facilities, including bulk delivery. They were astonished to learn about the high milling capacity housed in a relatively small space. Also astonishing, Mr. Moor reported, were the great efforts made to improve the sanitation of the plants, particularly in connection with insect and infestation control. The visitors were impressed, but horrified, when told of the large amount of money such control measures cost. They were impressed, too, to find that most American mills have extended quality control on wheat and flour, and are equipped with modern and efficient laboratories.

### European Impressions

Mr. Moor then turned to the Japanese millers' impressions of European mills. Generally speaking they found that European mills have less elevator and warehouse capacity than most U.S. mills, and the mill building is the dominant part of the plant. As to equipment, the elevators have a smaller intake capacity because the wheat arrives in smaller lots. Pneumatic unloading equipment is employed and in the elevator itself horizontal conveying is done to a large extent

(Continued on page 6a)

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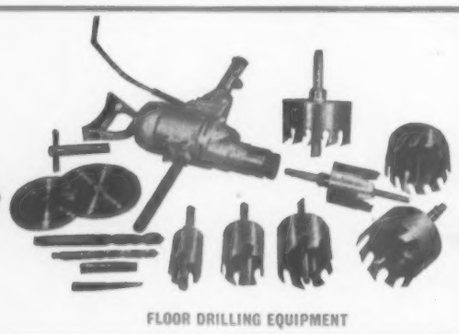


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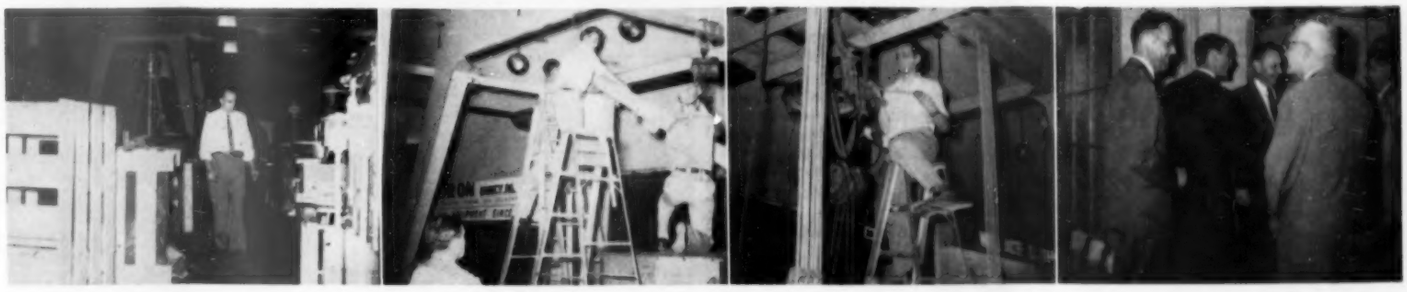


**EXHIBITS—Many hours work went into the preparation of the exhibits at the AOM technical conference. Seen at left is one of the aisles early on the morning of Sunday, May 6. By evening the exhibition was immaculate. Exhibitors valued the machinery at more than a quarter of a million dollars. The second picture shows Emil Kliebenschaedel, Buhler Bros., Inc., assisting with the erection of the Buhler sifter in the early hours of Sunday morning. The second shot shows him fixing the machinery for operating the sifter. The machine attracted a bevy of visitors and in the last picture Hans Weniger, Sprout, Waldon & Co., Inc. (Buhler flour milling division), C. Rudolph Moor, Buhler Canadian representative and Ernest Roth, Buhler Bros., Switzerland are seen greeting some of the many millers who visited the exhibit, the largest in the show.**

**FOREIGN VISITORS—Many foreign visitors attended the AOM conference. In the first picture, left to right, Gerald Griffin and David Casson of Henry Simon, Ltd., are seen answering questions on the new Simon purifier posed by C. S. Fisher, Saskatchewan Wheat Pool's flour division and Tibor Rozsa, Pillsbury Mills, Inc. Highley Sugden of Henry Simon, Ltd., seen in the second picture, came over from England to attend the conference. The third picture shows James T. Wimbush, Kipp-Kelly, Ltd., Winnipeg, Denys W. Povey, Thomas Robinson & Son, Ltd., Rochdale, England, who also came over specially to attend and Michael Fanning, newly appointed Robinson representative in Minneapolis. The final picture shows, left, Odd Sandel, Ogilvie Flour Mills Co., Ltd., Montreal with Fritz Schiess, Buhler Bros., Inc., Minneapolis. Ten countries were represented at the meeting.**

**INFORMAL DISCUSSIONS—The conference provided an opportunity for many informal discussions. In the first picture Walter J. Rudy, (left) Merck & Co., Inc., Dallas, listens to an explanation of the pamphlet "Bread Facts for Consumer Education" provided by Frank Warren, of Merck's Rahway headquarters. Copies of the pamphlet were available for visiting operative millers. In the second picture, Ben Blackburn, Fant Milling Co., co-chairman of the conference committee and C. A. Veeck, Strong-Scott Mfg. Co., Minneapolis, listen to Donald S. Eber, AOM secretary. In the third picture, R. M. Finch, Wallace & Tiernan Co., Inc., poses a difficult question for Meade C. Harris of the same firm. Finally, a puzzle is answered, the puzzle of the two Morrises, both of the St. Regis Paper Co. On the left is Jack of Minneapolis, a sales engineer, and on the right Jack of New York, advertising manager.**

**MORE CONFERENCE PERSONALITIES—At left, in the first picture, is Mrs. R. M. Pease with Mrs. John Geddis, General Mills, Inc., Tacoma, Wash. They are talking with R. M. Pease, Jr., Colorado Milling & Elevator Co., Denver, Col. In the second picture are Mr. and Mrs. William P. Riley. Mr. Riley, William Kelly Milling Co., Hutchinson, Kansas, is the newly-elected president of AOM. Mr. and Mrs. Stein E. Willits appear in the next shot. Mr. Willits is with Burrus Mills, Inc., Dallas. Finally, a threesome—Robert B. Dodds, Entoicter Division, Safety Industries, Inc., New Haven, Conn., John Mees of the same company, and O. J. Zimmerman, Minneapolis. Attendance was more than 760.**

# Completely New Pneumatic Mill Built for Small U.S. Firm

A new all-pneumatic flour mill recently started operations at Elkton, about 17 miles southeast of Harrisburg, Va. The builders claim that it is the first new fully pneumatic flour mill in the U.S.—that means pneumatic from the spot where the grain is received to the delivery of the finished products to the packers.

The Elkton Milling Co. formerly operated a small feed mill with railroad sidings in the town, and an old flour mill located on a river bank outside of the town. Several successive floods endangered the flour milling operation and the owner, E. P. Louderback and his sons, A. H. and F. E. Louderback, decided to combine the two milling operations and locate the entire business in the town.

Sprout, Wuldron & Co., Inc., representing Buhler Brothers, the Swiss milling engineers, suggested the erection of a two-story frame building which, through the ultilization of Buhler pneumatics could easily house the new flour mill and still allow ample warehouse space for future expansion.

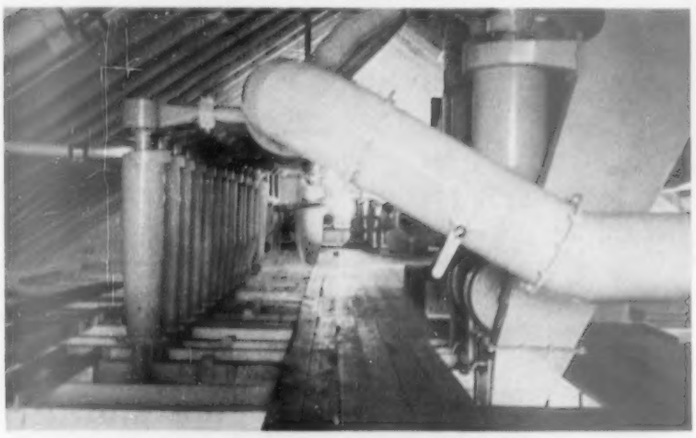
The new mill has a capacity of approximately 220 cwt. in 24 hours of soft wheat family flour and is equipped with new Buhler machinery and pneumatic conveying equipment.

A separate independent pressure type pneumatic system conveys the raw wheat from the existing feed mill elevator approximately 90 ft. underground into the new building and from there conveys it vertically to the new holding bins. Here the wheat is aspirated by means of the Buhler double separator, Type MPTA, in which the air used for conveying separates the light screenings from the grain. This unit has a capacity of approximately 200 bu. an hour.

The cleaning house utilizes some of the previously existing machinery but is equipped entirely with Buhler suction pneumatics complete with automatic choke eliminators and automatic air control valves, which complete the entire aspirating system. In other words, with each lifting of the

(Continued on page 20a)

NEW PNEUMATIC MILL—The top picture shows a general view of the exterior of the Elkton mill, a two-story frame building. The middle picture shows the sifter and purifier on the second floor.



RECEIVERS—Pictured are the pneumatic receivers in the Elkton mill. Those on the right are for flour, at the left for mill stocks, and the rear for wheat.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## CONVERSION

(Continued from page 1a)

that the plant was equipped with three or four different makes of roll stands and presented a rather "hodge-podge" appearance before the uniform size and style of roll stands were built. This work, too, was done in the shop.

**Preliminary Work Important**

The mill superintendent told his fellow millers to "do as much of the preliminary work as possible before shutting down your mill." This included installation of the new line shafts and any other work that could be done while the mill was still in operation.

He said that the mill was shutdown for a 15-week period, six of which were necessary to get the 50-year-old building into proper condition to permit the installation of the pneumatic equipment and the new purifier line. The actual time of installing and reorganizing the mill plan required nine weeks after the building was reconditioned.

During the remodeling program, Mr. Paterson re-equipped all roll stands with "wrap-around" drives and he said that on some of the drives they used a rubber transmission belt, and they were so pleased with its performance that all roll stand drives in the mill are now equipped with this type of belting.

The mill's capacity was increased by the installation of 14 additional roll stands and Mr. Paterson said that, in the planning stage, their aim was to bring the mill up from about 2,200 to between 2,800 and 3,000 sacks and the actual capacity of the mill was now 3,300 sacks and he added that he believed that this could be increased even more without the addition of any more roll surface.

**New things to be learned**

The mill superintendent said that there are many "new things to be learned" in the operation of a pneumatic mill. He said that it would be necessary to retrain the mill crew and that the millers probably would find some of the new features "hard to believe at first." One of the things they discovered was the fact that the air suction affected the operation of the feeders over the first break rolls and it was necessary to cut the leaf holes in the housing of the feeder to relieve the air suction, which was depressing the tray in the feeder and the recorded feed to the rolls was not the actual feed.

Among the problems found in operating the pneumatic mill, Mr. Paterson said that it is absolutely necessary to control the moisture content within a small range because a variation of 1% in moisture of the wheat going through the first break roll would affect the mill's balance.

**Advantages of Pneumatics**

He said that the pneumatic mill was "not as flexible as a bucket elevator type" mill and that you must "be on your toes constantly" to keep the mill in balance. Mr. Paterson said that a pneumatic mill is a mill that is much easier to keep clean. He said that the amount of sweeping necessary was cut to a minimum and the dust nuisance was almost entirely eliminated. But, he added, this does not mean that you will be able to get rid of the sweepers because there are many places that will need cleaning—things like the transparent windows in the pneumatic tubes and other points will need the attention of a man to keep the system in condition.

He said that the pneumatic system also cuts the infestation problems to a minimum, but he cautioned that it was still necessary to maintain the mill's sanitation program. He emphasized that the pneumatic system does not eliminate a need for a sanitation program but it does reduce the amount of work as compared with a sanitation program in the conventional bucket-elevator type of mill.

Finally, Mr. Paterson told the millers that, with the old mill, their output was between 50 and 52% of patent flour with an average of .40 ash content. With the pneumatic mill, he said, the patent flour percentage has been increased to 60% with the average ash of that flour being between .35 and .36 ash content.

Mr. Wimbush's part in the joint presentation included a general summary of the modernization program from the engineering standpoint and the showing of a number of projection pictures to show the audience what had been done.

He said that a job of this magnitude and complexity demands, above all, close team work between all concerned. "At no time is close team work more necessary than when planning the pre-installation shutdown and in scheduling the actual erection of the new equipment and the reflowing."

## Feed Mills Installing New Machinery

Many feed mills have been installing new equipment and improving their facilities recently, and this trend is apparent in a report from the Prater Pulverizer Co., Chicago.

The report tells of recent Prater machinery installations in some 20 mills in 10 states in different parts of the country. The equipment included mixers, feeders, hammermills and other machinery.

Also reported were several Wenger molasses mixer installations in local midwestern mills.

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## EUROPEAN METHODS

(Continued from page 1a)

by chain conveyors rather than by belts. The inclosed chain conveyors keep very clean, are dust-tight and explosion proof.

The Japanese noticed less handling equipment than in the U.S. and more labor used. Practically all mills have bulk storage for their finished products, but shipping in bulk is still the exception rather than the rule.

The visitors were impressed with the wide adoption of the pneumatic system in Europe. Pneumatics, Mr. Moor said, have not only replaced bucket elevators, but they have influenced the layout of the plants. For instance, the conventional five or four-floor mill has been reduced to three, two, and even one floor. Looking at the roller floor the visitors saw a greater number of stands for the same capacity compared with American mills. The roll speeds, they observed, are considerably lower. More machines were installed on the purifier floor than in the U.S. and all have double feed. The first impression of the sifter floor of a European mill is that the machines are built much lower, that is to say with less sieves stacked and, without exception, are of the free swinging type.

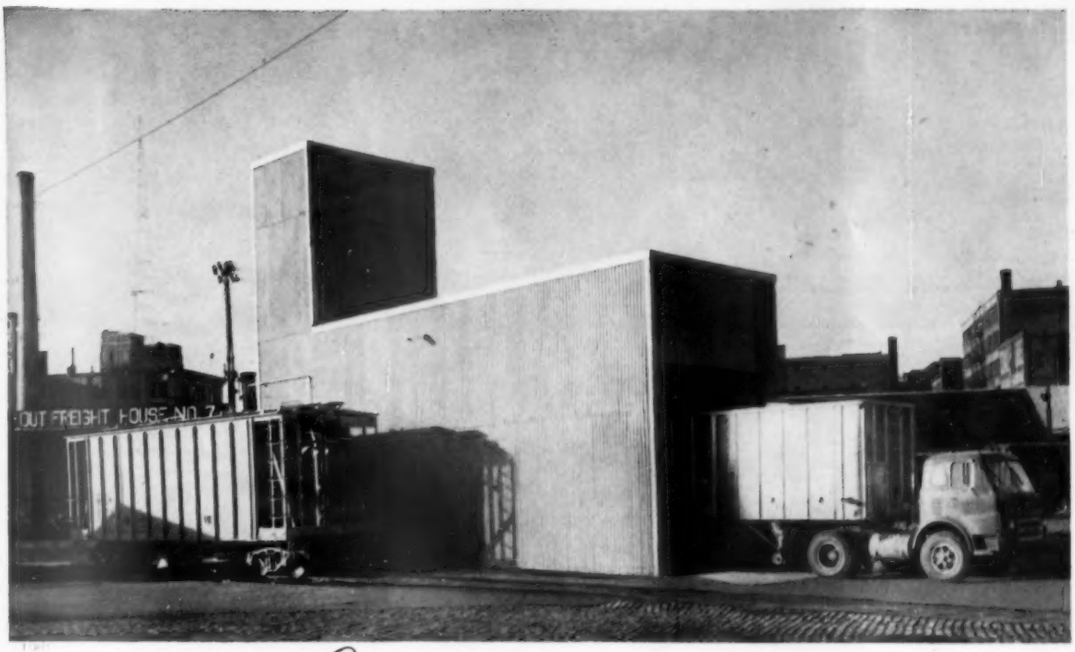
Although the Japanese had studied the literature on pneumatic mills, they had never seen one in operation and were rather skeptical. However, after their visit they became fully convinced of the unquestionable advantages of this conveying system, Mr. Moor related. They were impressed with the cleanliness and improved sanitation, the foolproof operation and the flexibility of the pneumatic mill and realized the possibilities of revolutionary new layouts.

Mr. Moor then proceeded to examine the way in which milling methods differ between the U.S. and Europe, though he stressed, methods in Europe differ from country to country. The wheats used vary widely in milling quality and many varieties are blended.

Mr. Moor said that expenditures on new equipment are largely compensated by a lowering of production costs and, at the same time, by increased yields. Careful accounting of various modernization jobs carried out in American and Canadian mills has shown that the improvements obtained have paid for the expenses within the relatively short period of from one to three years. Modernization is a paying proposition, he declared.

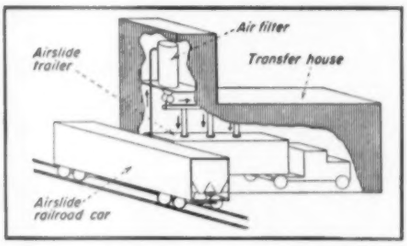
Coming to his main theme, Mr. Moor said: "Considering conditions as they are in America such as uniform grades of wheats with little variation in milling quality, dry milling, high loads on all machines and lower extraction, the methods as developed here are certainly the most suitable to produce the desired high flour quality on a competitive basis."

Despite this, Mr. Moor considered that some of the principles of European milling, neglected in America, could be applied with advantage to the American milling process "in order to improve the over-all yield and at the same time give a better percentage of patent flours with better qualities." He listed as important the more efficient preparation of wheat to improve milling; the higher release of well-sized clean middlings on the break system; better classification of stocks going to the purifiers, and flour-free stocks going to purifiers and reduction rolls.

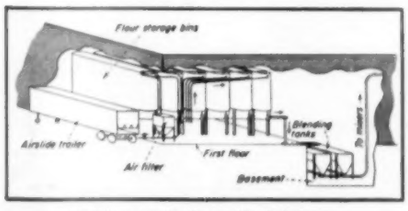



# OMAR *Incorporated* profits by using

# Airslide cars and Airslide bulk flour van




Airslide car and Airslide van at railroad terminal.




Airslide van unloading to bins in bakery.

Fuller equipment played no small part in the expansion and modernization program of Omar, Incorporated, in its Milwaukee bakery.

In addition to the many striking innovations by Omar engineers, was the adoption of complete bulk-flour handling from mills to bakery. In fact, the Airslide bulk-flour van contributed largely to the feasible solution of this problem since the railroad yard is located 1½ miles from the bakery.

Flour is shipped from the mills in General American Transportation Corporation Airslide cars (capacity 95,000-lb.) for delivery in the yard at Milwaukee. Upon arrival, the 40,000-lb. capacity Airslide van, is spotted in an unloading building alongside of the track, where a conveying line is connected to the hopper discharge of the Airslide car, for transfer of the flour to the van. This transfer is accomplished by the action of the Airslides installed in the bottom of the car and the Airveyor system in the unloading building which is energized by connecting to the vacuum side of the exhauster-blower on the van.

Two small blowers, installed on the van, furnish air for the Airslides on the car or the Airslides on the van. When unloading at the bakery, the flour, delivered by the Airslides in the van, is charged into a conveying line by a rotary feeder and blown to storage. Loading or unloading of the van is accomplished in about one hour. The system is push button operated from a panel board on the van.

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# Cargill Announces Plans to Build 6 New Elevators

MINNEAPOLIS—Plans for immediate construction of million-bushel grain elevators at five points in western Minnesota and North Dakota were announced here recently by John H. MacMillan, president of Cargill, Inc. Also announced were plans to build a 100,000-bu. waterfront grain elevator at Michigan City, Ind.

The five new facilities in the Northwest, which will have considerably greater capacity than existing types of country elevators, are to be located at Breckenridge and Crookston, Minn., and at Minot, Dickinson and Carrington, N.D.

Designed by Cargill engineers, the five elevators will be identical in their construction and operation and will be equipped with the most modern facilities for handling bulk shipments of grain by truck and rail. Each elevator will consist of two concrete storage tanks and a head house for operating machinery. They will serve both as buying and as storage elevators for the grain firm.

Plans call for completion of the plants by Sept. 1 in time to receive 1956 crop grain.

"The presence of these facilities in the heart of the grain producing area," Mr. MacMillan said, "will help to provide farmers with a more dependable outlet for their grain with less possible effect from deterrent factors such as the present acute shortage of rail freight cars. The result should be to attract a greater share of the farmer's production into the free market.

"Construction of these elevators will enable Cargill to compete more vigorously for the relatively small supply of cash grain not owned by the Commodity Credit Corp. or tied up under government loan," Mr. MacMillan said.

The company is also looking ahead, he said, to the possible effects of the St. Lawrence Seaway on the pattern of grain distribution.

The Michigan City elevator is expected to be in operation before the end of 1956. The elevator will include, Mr. MacMillan said, "the most modern facilities for bulk handling of all types of grain, with docking and loading for lake barges and hydraulic unloading equipment for trucks.

"The new installation is designed to enable more efficient movement of grain from the producing areas of Indiana, western Ohio and southern Michigan to Chicago and to eastern ports."

The company anticipates that fast-turnover equipment at the new plant will be capable of unloading a truck of grain in four minutes and will have a loading-out rate of 20,000 bu. hourly. It also will employ the latest and most efficient methods of dust collection.

The Cargill organization operates 50 country elevators and 40 terminal elevators and maintains processing plants, warehouses and offices in more than 150 locations.

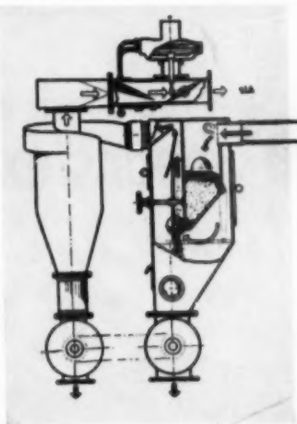
—BREAD IS THE STAFF OF LIFE—

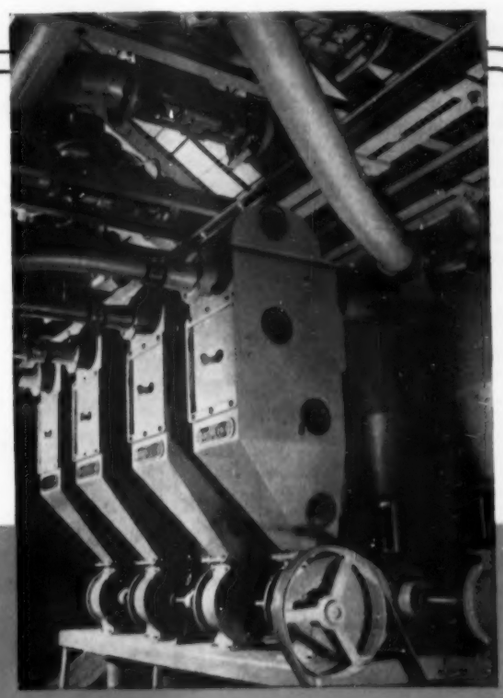
## What Did You Guess?

DALLAS—John A. Kenyon, Richardson Scale Co., St. Louis, Mo., Roy A. Robinson, Bay State Milling Co., Winona, Minn., and Latham Conger, Quaker Oats Co., Akron, Ohio, were the winners of prizes offered for men by the Hart-Carter Co. of Minneapolis. The firm featured a daily contest in which the winners were required to guess the number of indentations in different types of Carter seed machine discs. Mr. Kenyon estimated 2970 pockets in an 18" diameter disc with CC pockets against the actual 2,966. He collected a grill and waffle iron. Mr. Robinson won a silver platter and serving dish with a guess of 3,663 pockets in a 21" diameter EE pocket disc, only one short of the correct figure. Mr. Conger estimated that a 25" diameter disc with V4 pockets had 14,904 pockets, the correct number being 14,888. His prize was an electric broiler.

A drawing was also made of the cards submitted by the ladies and Mrs. J. George Kehr of Minneapolis won an electric hot plate. The men also were concerned in a drawing, and this resulted in Hugh J. Mathes, Mount Vernon Milling Co., Mount Vernon, Ind., winning a picnic basket.

S. Howes Co., Inc., Silver Creek, N.Y., presented a color television set for drawing among active members of AOM only, in celebration of its 100th anniversary. This was won by Mrs. Creighton Morrison, Lindsey-Robinson Co., Roanoke, Va.



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## AOM SUMMARIES

(Continued from page 1a)

and number of grooves per inch, the application, whether dull to dull, sharp to sharp or a combination thereof, the speed of the rolls and the amount of spiral. The decision he makes will affect the over-all performance of the mill, and with it the yield, the quality of the flour and the power requirements.

Mr. Heide commented on the differences between American and European practices of corrugation. The American method, using a multiple cutter is much faster than the European method which adopts a single tool. By the European single tool method a 10" by 40" roll requires about four machine hours for a medium size corrugation. Mr. Heide developed his theme by showing a series of pictures, starting with methods of corrugation, the possible variations of corrugation and indicated why the single tool is used. He said that the single tool is far less expensive and can be easily reground for any desired corrugation.

### Wheat Conditioning

The operative millers were given a "progress report" on the research in wheat conditioning that has been done at the Federal Research Institute of the cereal industry, Detmold, Germany. The speaker was Dr. Werner Schafer of that institute's staff.

Dr. Schafer said that the three factors influencing wheat conditioning were time, temperature and moisture. He said that the qualities of the protein in the aleurone and endosperm are affected by conditioning and in turn have an effect on the baking quality of the flour milled from that wheat. The pick-up of water by the wheat kernel is very rapid, Dr. Schafer said, explaining that the "bran works like a sponge."

He told of research in tracing the path of the moisture into the starch cells by the use of iodine vapors. The iodine reacts with the starch to produce a bluish color. The degree of penetration can be measured by the use of a colorimeter and this has an advantage over the usually accepted moisture determination test in that the latter measures only the total amount of moisture present in the wheat kernel and not its distribution in the kernel.

Dr. Schafer's address was supplemented by a series of photomicrographs showing the decomposition or destruction of the aleurone layer under different conditioning techniques. He advanced the theory that the separation of the bran layers from the endosperm during the milling process is aided by the gelatinizing or "cooking" of what he described as a viscous material contained in the aleurone cells and he was able to show photomicrographs of the aleurone layer to illustrate his belief.

### Instrumentation-Automation

C. W. Brabender of C. W. Brabender Instruments, Inc., South Hackensack, N.J., called his paper "Instrumentation-Automation." He explained that he could have called it automation and skipped the instrumentation part of it. Yet he wished to expand the title by using "instrumentation" because the flour milling industry has been automatic for 50 years. For quite a while it had a monopoly of automation. It required at least two decades, after the flour milling industry had introduced complete automation, for other industries to follow. In the old days, however, operations depended upon the skill of the miller. No instrumentation was available.

Mr. Brabender examined the difference between the automation of 50 years ago and today's conception of automation. The difference he said, can be expressed best by saying that 50 years ago it was not really automation but rather "continuous flow production mechanization" wherein production was carried out by machines in which there were controls to direct the performance of each operation in the right sequence and during the correct time interval. Very often these controls, though primitive, indicated a gross malfunction of the machines, but they rarely did more than signal the operator that something was wrong.

To justify automation, therefore, a further step was needed, Mr. Brabender said. The next phase was the introduction of sensing devices. Yet there is no clear dividing line between mechanization and automation. He proceeded to talk about milling activities falling into what he called the "gray" area between these two concepts.

Instrumentation is expensive and, therefore, has to be justified. Mr. Brabender showed illustrations of instrumentation application. He covered moisture testers for in-mill control, instrumentation which has a direct bearing on the flour yield, stream weighing during the grinding process, roll pressure indicators and controllers, instrumentation used for keeping a mill on capacity and uniform and, finally, controls for the baking performance of flour.

### Flour Package Weights

Willard M. Meinecke, General Mills, Inc., gave a report on the weights and measures conference sponsored

by the Millers National Federation at St. Louis last November. Described in detail were problems connected with package weights, variations and deviations, the differences between federal and state regulations on weights, equipment for packaging and weighing and check methods.

### Bulk Handling of Flour

A half-day session devoted to one topic—bulk handling of flour—was a feature of the conference. Participating in the session on bulk flour handling was a panel of 10 representatives of companies either manufacturing or using bulk flour handling equipment and, for the most part, they were on the receiving end of a great number and variety of questions directed to them by the milling superintendents who had questions to ask or comments to offer about modifications in the equipment. The panel, which led off the discussion during the afternoon program was composed of the following men:

Ray Gorgen, The Day Co., Minneapolis, Minn.; John M. Gleason, General American Transportation Co., Chicago, Ill.; William Burnet, Superior Separator Co., Hopkins, Minn.; R. K. Morgan, Fruehauf Truck Co., Detroit, Mich.; F. J. White, Jr., Tote Systems, Inc., Beatrice, Neb.; Howard S. Sayre, The Fuller Co., Catasauqua, Pa.; O. J. Zimmerman, Minneapolis, Minn.; D. W. Pollei, Pillsbury Mills, Inc., Minneapolis, Minn.; Robert Howard, International Milling Co., Minneapolis, Minn., and Alden A. Ackels, General Mills, Inc., San Francisco, Cal. R. C. Bradford, Pillsbury Mills, Inc., Minneapolis, acted as panel moderator.

Prevention of condensation in bulk cars either during the time that the cars are being loaded with flour at the mill or while they are in transit seemed to be the largest single problem connected with bulk transfer of flour.

A supplementary problem connected with the condensation was that of cleaning the cars at the mill preparatory to reloading them, and both the millers and the equipment manufacturers had several suggestions to offer. Mr. Ackels, reported that the use of exhaust fans, above the hatch covers during loading, was a great aid in preventing condensation during loading and that the condensation during transit cou'd be controlled with the use of about 25 lb. of silica gel suspended inside perforated metal containers under the hatch covers. He said that the silica gel was put into cotton grain sample bags, and that this amount of silica gel in a car absorbed between two and three pounds of water a trip. He pointed out that two or three pounds of water could account for the formation of a considerable amount of dough and that the cars were relatively easy to clean before reloading.

Mr. Morgan said that the weekly use of from 800,000 to 1 million pounds of flour a week wou'd justify a baker in changing to bulk trucks. Some bakers, he revealed, saved as much as $1,500 a week by using bulk trucks. Dealing with the labor question, Mr. Morgan said that bakery plants using 2,000 cwt. a week were finding that one man was sufficient to handle the unloading and take care of the bins.

In answer to a question from the floor, Mr. Gorgen said that round bins were preferable to square bins because the latter had to be built heavier and, in consequence, were more expensive. Hopper design, too, is more adaptable to round bins. Mr. Gorgen believed, however that where concrete construction is used square bins are preferable.

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## Grocery Manufacturers Name Don R. Cowell

NEW YORK—Don R. Cowell, public relations director of the Quaker Oats Co., has been elected chairman of the public relations advisory committee, Grocery Manufacturers of America, Inc. Lee S. Bickmore, vice president in charge of sales and advertising for National Biscuit Co., was elected vice chairman of the committee.

Mr. Cowell has been director of public relations for Quaker Oats since he joined the company in 1947. His previous positions were in public relations for Inland Steel Co., the Chicago Surface Lines, and the Illinois Bell Telephone Co.

Mr. Bickmore is a veteran of 23 years with Nabisco. He started at the company's sales branch at Pocatello, Idaho, shortly after he graduated from Utah State College, and was later branch manager there. He was appointed to the vice presidency in 1950.

The GMA public relations advisory committee comprises about 25 general executives and public relations officials of member companies. It assists GMA in planning and executing a program to help the public understand the essential processes from farm to table.


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# Fire Down Below: Careless Welding Causes Damage

**EDITOR'S NOTE: The following is a copy of an adjuster's report of a fire and explosion that occurred in March, 1956. Names have been omitted or changed. The report points up the dangers arising from careless welding concerning which a warning was conveyed to millers in a recent issue of this publication. The contributor comments: "Contrary to published instruction, they were not using tarpaulins or paying attention to where the sparks were going. Consequently, there was bodily injury and property damage—all totally unnecessary. In extinguishing the fire that damaged the building and equipment, the firemen had to wet down the equivalent of 11 cars of soybean meal." The lesson is as applicable to the flour milling industry as it is to the feed industry.**

v v

This item of the risk is a fire-resistive concrete elevator with three steel tanks. The feed mill is detached 125 ft. south and is a combustible building, once a flour mill.

The assured had employed the services of a service contractor to make three concrete tanks in the elevator gas-tight. It is their purpose to hold pelleted alfalfa meal under 3 oz. pressure of carbon dioxide to prevent the loss of vitamin A due to oxidation. The interior of these tanks had been sprayed about a week or 10 days before the fire occurred. The material used to coat the interior was heated in drums by setting the drums over an open fire until the material was very thin. A fan was placed at the top manhole to draw off the fumes, and when the spray painting was finished in a tank the fan continued to run until the coating was dry.

Spouts were being reset to allow these bins to be air tight and the assured had Willard, Lewis and Houston, their own employees, doing the necessary welding. A spout leading to the northwest tank was almost completely welded when the contractor's foreman asked that some lugs be welded on a two inch pipe, about 18 in. long. These pipes were to be set through the 13 in. double concrete slab over the tanks, and the lugs were to hold the pipes in place. The operation was being done on the roof of tank 31.

### Fire and Explosion

It was about eight minutes after the welding on the spout had been discontinued, and one pipe had been completed and another started, when the foreman looked into this tank. He did not notice anything out of the ordinary and replaced the lid, setting it on top of the 1 in. lug bolts. He says he did not set it to engage the holes, merely on top of the lugs. After setting the lid down on tank 31 he and his helper went over to the northeast tank to try to catch a rope hanging down through a hole. The pipe was threaded on this rope and then pulled through the roof and secured. The purpose of the pipe was for the carbon dioxide to enter the tank. While the foreman was looking down into the northeast tank he saw a lick of flame enter the bottom opening of this tank. He and his helper jumped up and by the time they were on their feet the head house was subject to an explosion.

The assured was elevating corn when the explosion occurred, and the resulting fire burned the belting, which fell. The foreman and helper ran to the southeast side of the elevator, where a scaffold was hanging, and went down the ropes. Lewis and Houston scrambled over the side of the tank and lowered themselves on the scaffold. Willard looked around, did not see the others and thought they had been blown off the roof. He went to the electric manlift and started to descend. About half way down a second explosion occurred, badly burning his hands and face. Although his hand was burned he managed to keep his finger on the "down" button and reached the work floor. He does not remember leaving the manlift, but another explosion just as he got to the elevator door blew him out and on to the ground. Although he suffered third degree burns on his hands and face, he will recover.

The main fire station is about a block away. One of the firemen was looking toward the elevator and saw the explosion and resulting fire. He gave the alarm. The use of an aerial ladder and hose helped in throwing water into the head house. From evidence, most of the fire was confined to the inside of the steel leg, as soybean meal and other dust in the headhouse did not burn.

The fire marshal says the firemen always have watched the elevator, as they were always afraid it or the mill would burn.

### Theory of Cause

Although the welding on the spout had been stopped for about 10 minutes, welding was being done with an electric welder at the time of the explosion. The foreman felt that no sparks could have entered the northwest tank. However, it is very possible some fell through the space left when the lid was set on the bolts

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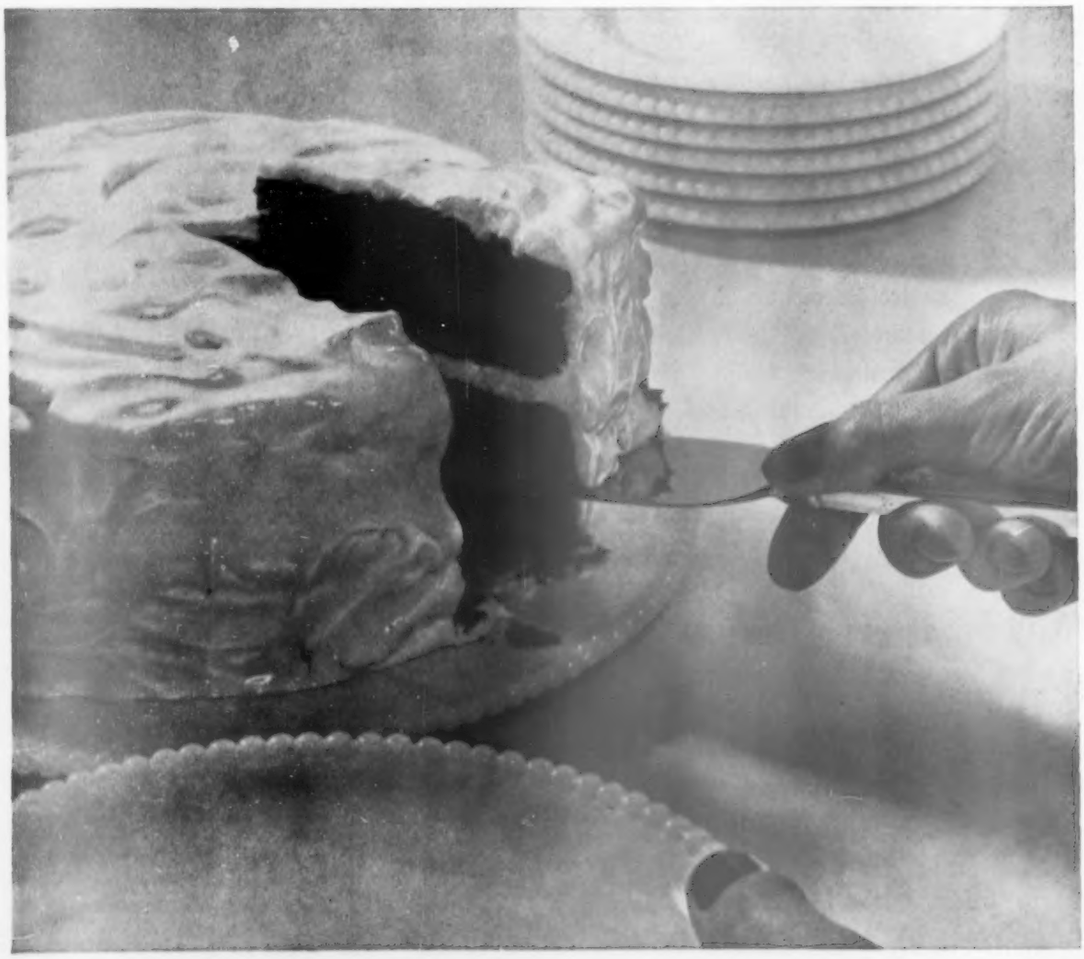

## COLOMBIAN MILLER EXPRESSES THANKS

**DALLAS—A highlight of the AOM annual banquet was the presentation of a diploma to Luis C. Giraldo C., La Industria Harinera S.A., Pasto N., Colombia. Mr. Giraldo took the association's correspondence course.**

**In his speech of thanks, Mr. Giraldo said: "It is a great honor for me to have the privilege of joining with you in this wonderful technical conference for the first time. It gives me a fine opportunity to meet so many nice people in this great country of yours.**

**"I want to thank all of you, my brother millers, for the technical help made available to me through the AOM flour milling course, through the technical bulletins and books.**

**"I also want to express my thanks to Allis-Chalmers and Buhler Brothers for giving me the opportunity of obtaining my practical experience as a miller through the use of their machinery in our mill.**

**"In conclusion, I want to say a very special word of thanks to Mr. Donald S. Eber for his kindness to me and his helpfulness whenever I had any question to ask. We have corresponded over a period of many years and he is always ready with advice and assistance. Muchas gracias, senoras y caballeros."**

around the manhole. It is also possible that sparks had fallen through the spout when it was being welded, gone through the open spout at the bottom of the tank and ignited the dust in the basement. The foreman reports that a water barrel had been tipped over in the basement during the day and all the dust in that section of the basement was wet. The elevator foreman had been in the basement until about two minutes before the first explosion, and did not see anything wrong.

With the elevator leg raising dust due to elevating corn, it is the opinion of the adjuster that a spark or piece of molten iron entered through the space under the lid set on the bolts and ignited the dust that had entered the bottom of this bin. Evidence indicates that this, the northwest, tank received the heaviest jolt, as the double layer slab roof shows some rupture at the northwest edge of this tank and roof.

Soybean meal was in two tanks and slightly wet on top. A fireman pulled the slides on the barley and corn bins and about 500 bu. of the corn and all the barley ran into the basement. He also opened a slide on the soybean bin, but this was closed almost at once.


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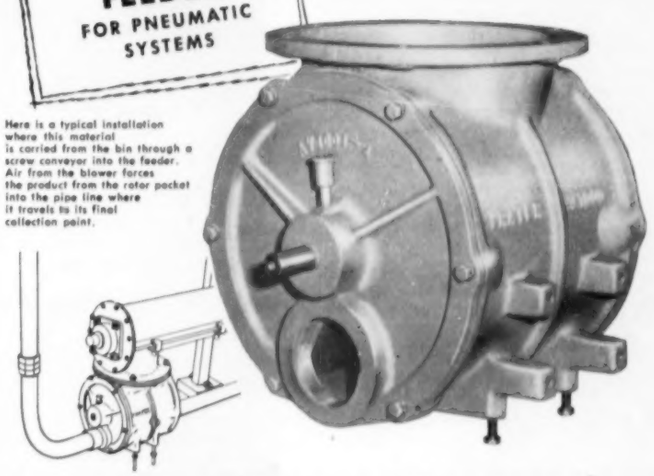

Here is a typical installation where this material is carried from the bin through a screw conveyor into the feeder. Air from the blower forces the product from the rotor pocket into the pipe line where it travels to its final collection point.

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## No. 5459—Variable Speed Drives

A 44-page booklet carrying multicolor tables to simplify selection of variable speed "Texrope" drives has been released by Allis-Chalmers Manufacturing Co. In addition to providing selection tables for A, B, C and D section variable speed drives, the booklet includes information on design features, drive principles, horsepower rating tables for A, B, C, D and E section belts, a speed range table showing the variation in rpm when using two "Vari-Pitch" sheaves in combination, and accessory drive equipment. Secure more complete details by checking No. 5459 on the coupon and mailing it to this publication.

## No. 5460—Pink Wheat Detector

An instrument for identification of pink wheat, called "Black Light," is being offered by the Seedburo Equipment Co. The cabinet size is 12 by 10 by 10 in. and holds two 8-watt high intensity bulbs. An open bottom

section permits setting the unit on side rails of a grain viewer. The unit operates off 110 volt, 60 cycle A. C. current. Secure more details by checking No. 5460 on the coupon and mailing it to this publication.

## No. 5465—Barley Sieve

A new barley sieve which is claimed to conform with new barley grades recently announced by the U.S. Department of Agriculture has been brought out by the Burrows Equipment Co. The company's announcement states: "The new grades will affect both feed type as well as malting type barley grown east of the Continental Divide. They will become effective July 1, 1956. Under the new grades, thin barley will be determined by the use of a 5/64x¾ sieve instead of the 4⅞/64x¾ sieve which has been in use to date. The new malting barley grades No. 1, 2 and 3 provide for 7% of thin as maximum for No. 1 malting barley, 10% as a maximum for No. 2 malting barley and 15% as a maximum for No. 3 malting barley through the new sieve." Further information is available by checking No. 5465 on the coupon and mailing it to this publication.

## No. 5458—Moisture Controller

The introduction of a new continuous measuring and control device for granular or free-flowing materials has been announced jointly by the Quaker Oats Co. and the Fielden division of the Robertshaw-Fulton Controls Co. The product, named the Rogers moisture controller after its inventor, will be marketed by Fielden to the grain, milling and food pro-

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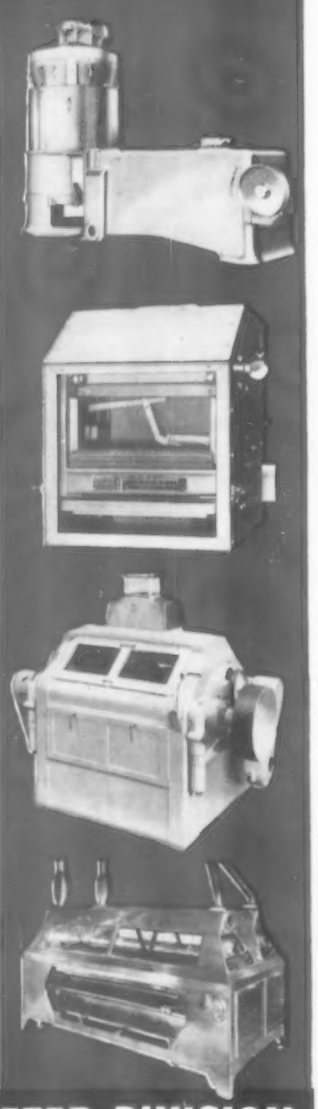

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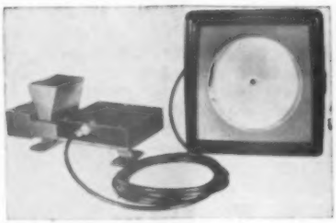
ENTOLETER DIVISION
SAFETY INDUSTRIES, INC.
Formerly The Safety Car Heating and Lighting Co., Inc.
P. O. Box 904 New Haven 4, Conn.



cessing industries. It is a development of the Quaker Oats Co. The device measures moisture content and controls it continuously—the measuring being based on the capacitance bridge principle. The controller, or measuring unit, is a RF capacitance null balance instrument designed and manufactured by Fielden. The moisture recorder-controller has been applied commercially on corn products, hominy grits, whole grains, rolled oats, dry dog food, corn flour and commercial mashes. The advantage is claimed to be increased efficiency of drying, cooling, or tempering device, and more nearly uniform moisture at optimum level. The test cell unit is approximately 18 in. long, 10 in. wide, 12 in. high and driven by a 1/3 h.p. motor; the recorder 17 in. high, 14 in. wide, 8 in. thick. Secure more complete details by checking No. 5458 on the coupon and mailing it to this publication.

—BREAD IS THE STAFF OF LIFE—

## Parent Firm of Entoleter Makes Change in Name

NEW HAVEN, CONN.—Announcement is made by the Safety Car Heating & Lighting Co., Inc., New Haven, Conn., of a change in corporate name to Safety Industries, Inc., effective June 1.

The change was voted at the annual meeting of the stockholders in April, when the directors were unanimously reelected. H. F. Kneen, president of the Safety Car Heating & Lighting Co., states that the change in corporate name to Safety Industries, Inc., follows the successful accomplishment of the company's diversification program, resulting in greatly broadened scope of activities.

According to Mr. Kneen, there is no change in management. Executive offices will continue to be in New Haven, Conn. Safety Industries, Inc., has three divisions and five subsidiaries.

In the grain milling industry, the company is largely known through the products of its Entoleter Division. These include dust collectors and Entoleter centrifugal machines for particle size reduction, blending and mixing, grain cleaning and infestation control.

Recently, the company acquired the Automatic Temperature Control Co. of Philadelphia, manufacturer of timers and automatic devices for the control of industrial operations, and the Howe Scale Co., of Rutland, Vt. Howe is a principal producer of electronic and automatic scales. Company officials state that the products of both companies will serve to complement Entoleter equipment in the milling industry.

Other Safety Industries divisions are: Electrical division, manufacturer of electrical generating and control equipment and air conditioning units —a principal supplier to the railway industry; lighting division, designer and manufacturer of lighting fixtures for railway passenger cars and other specialized applications.

The parent company was established in 1887, and since that time has been a major supplier of equipment for railway passenger cars. Products of its various divisions and wholly-owned subsidiaries are now in use in practically every division of industry.

—BREAD IS THE STAFF OF LIFE—

### TEXAS ELEVATOR PLANNED

CLARENDON, TEXAS — The Clarendon (Texas) Grain Co. will build a new elevator here, it was announced by Frank White, Jr., owner and operator of the company.

## *Outside Premiums on Cereal Packages Hit*

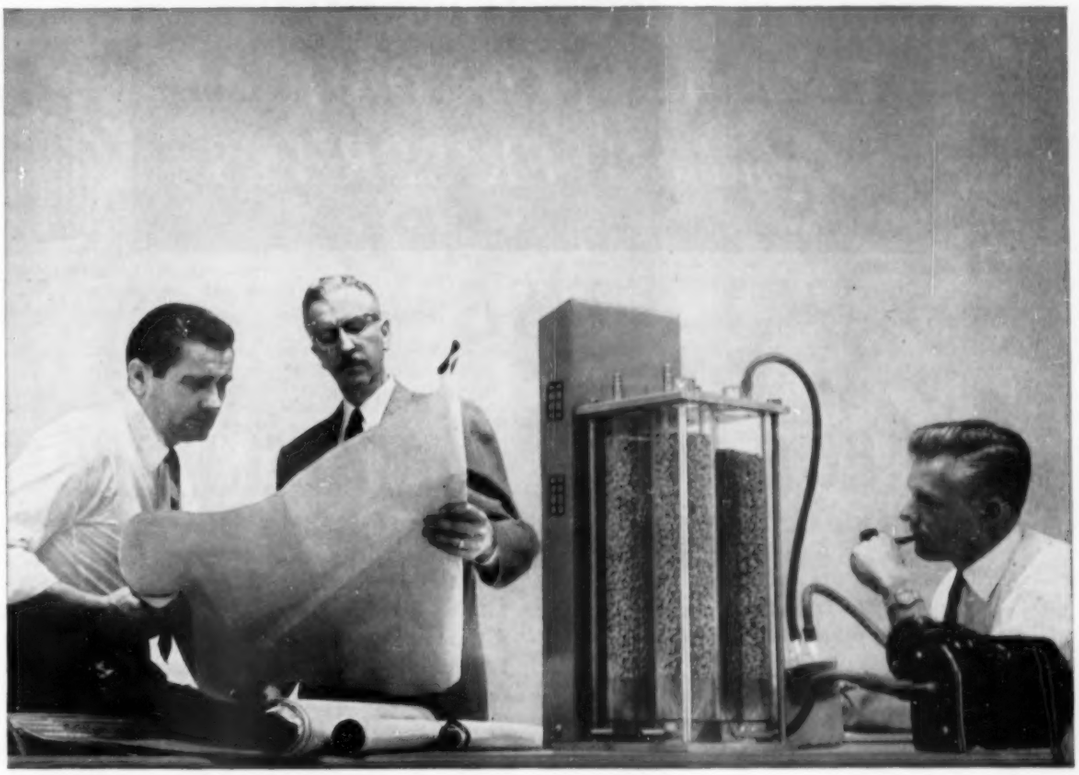
SAN FRANCISCO—Cereal packages with premiums on the outside are not desirable from the supermarket operator's point of view, according to Alice Zierolf, grocery department manager of the Littleman Corte Madera (Cal.) Supermarket.

"From the retailer's point of view," Mrs. Zierolf said, "the worst thing a cereal manufacturer can do is put toys, gadgets and novelties on the outside of packages where they're easy targets for pilferage." She complained that placing the premium under a cellophane window was little better. "The youngsters simply break into the package and walk away with the toys. We've had a lot of difficulty with this sort of thing."

As the manufacturer picks up damaged packages, she said there was no loss to the store. The annoyance of customers and loss of clerks' time are the reasons why she resents such packages.

A store manager of long experience, Mrs. Zierolf says packages generally should be strong, display and stack well, have eye appeal and also open and reclose easily.


Dow



*Scale model demonstrates how new method eliminates guesswork . . . lowers cost.*

# FUMIGATING BULK GRAIN?

## We can show you how to cut material costs at least 50%

**Dow's forced air recirculation process positively controls the distribution of methyl bromide in silo-type bins.** But—seeing is believing! A scale model demonstration by Dow's engineering service will show you this important new method of fumigating grain in silo-type elevators. You will see every detail of the process which sends an even flow of methyl bromide air mixture through the grain mass at a given rate per bushel per minute. Quick . . . uniform . . . sure . . . forced air recirculation eliminates guesswork by making the fumigation of bulk commodities an exact science. And it cuts material costs at least 50 per cent—because controlled distribution of methyl bromide means lower dosages.

Dow has adapted this major fumigation development to both silo-type storages and bulk shipments of grain under quarantine in freight cars. (It's effective with peanuts and popcorn, too.) Let a Dow fumigation technician show you how it may be adapted to your present aerating system or advise you on the design and installation of recirculation equipment for utilizing methyl bromide.

Write our Fumigant Sales Section. THE DOW CHEMICAL COMPANY, Midland, Michigan.

*you can depend on DOW FUMIGANTS* Dow

# Deep in the Heart of Texas

Mr. and Mrs. George B. Wagner of the Pillsbury Mills delegation from Minneapolis observed their ninth wedding anniversary at the annual technical conference of the Association of Operative Millers on May 9. Mr. Wagner, in addition to his duties as director of the department of economic biology for Pillsbury, is chairman of the sanitation committee of AOM.

* * *

We will spare a second miller a considerable amount of embarrassment by keeping his identity undisclosed but this is to report that one of the general superintendents for a milling company who was in attendance at the conference reported that he was "out of a job this morning." When asked why, he said that "my second miller stopped in a few too many entertainment parlors last night and the upshot of his visit was that he canned me."

* * *

**The technical conferences are drawing an increasing number of milling technologists from foreign lands each year. At the 1956 conference there were representatives from Peru, Brazil, Mexico, Germany, England, France, Norway, and Colombia, in addition to a sizable delegation from Canada. The representation from the foreign lands pleased the AOM officers since it emphasizes the international scope and interest of the organization.**

* * *

Many of those attending the technical conference thought that they were either seeing double or that some sort of a joke was being played upon them when they noticed the name "Jack Morris" on the lapel badges of two different persons at the same time. One of those rare coincidences has two men by that name who are unrelated, but who work for the same organization—the St. Regis Paper Co. The men are J. B. "Jack" Morris, a sales engineer for St. Regis who works out of Minneapolis and the second Jack Morris is advertising manager for the Multi-wall bag division of the paper company and maintains his offices in New York City.

* * *

Representatives of Merck & Co., Inc., performed a good service for the members of the AOM by having available for distribution at the Merck exhibit copies of "Bread—Facts for Consumer Education," a bulletin published by the U.S. Department of Agriculture and referred to by L. C. Robinson, retiring president of the AOM in his presidential address. The booklet, sixth of a series of bulletins to provide source material for workers in extension, consumer education, and marketing services as well as teachers, dietitians, nutritionists, food editors and others who give consumers information on food.

Anyone wishing a copy of the bulletin may obtain it by addressing a request to either C. L. Brooke, or Frank Warren, both of the Merck organization at Rahway, N.J.

* * *

Had there been a competition for an award to be presented for the best job of delivery of a conference address, it would undoubtedly have been given to Douglas Paterson, general superintendent of the Ellison Milling & Elevator Co., Lethbridge, Alta. for the job he did in telling the milling superintendents of the problems and work connected with converting a present day mill to pneumatic conveying. Mr. Paterson was assisted in his presentation by James T. Wimbush, chief engineer for Kipp-Kelly Ltd. of Winnipeg. Mr. Paterson talked extemporaneously and gave the technologists much useful information regarding benefits to be obtained through installation of pneumatic conveying system. A detailed report of his address is published elsewhere in this issue.

* * *

**The Texans who acted as hosts for the annual technical conference of the AOM deserve a large tribute for the excellent job of organizing and supervising the Dallas meeting. All of the functions were held as scheduled and there were no delays or any evidences of confusion apparent to the visiting delegates.**

* * *

The Allied Trades party was a particularly enjoyable event for the AOM members and their wives. Cowboy attire was the proper dress for the occasion and everyone had a very good time.

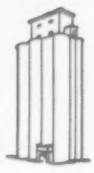
* * *

Drinks cost $1,000 a time, Confederate money, that is, and supplies of cash were handed out by the allied men. Those wishing to gamble could use the confederate cash to win real silver dollars. The partygoers were given western style hats to wear and many were taken home as souvenirs for progeny. Most resplendent of the guests was Don Eber who came in real western-style rig. The ladies, too, wore western dress.

* * *

James Wimbush, English expatriate in Winnipeg, Canada, dressed in jeans and cowboy shirt. His home town, like Gracie Fields, is Rochdale and his friends, including Robert Kipp,

For MORE EFFECTIVE
MORE ECONOMICAL
and SAFER SPRAYS



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**Weevil-Cide Contact Spray**

**A rugged, ready-to-use, high-knockdown, quick-killing CONTACT SPRAY. Contains synergized allethrin and pyrethrins in deodorized base oil.**

**Useful where proximity of grain, cereals, flour or other food products makes use of toxic residual sprays inadvisable.**

**Also successful for prevention or early control of Indian meal moth infestations on bin tops and other grain surfaces. Kills moths and exposed worms.**

**Binsecta-Cide**
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A safer RESIDUAL SPRAY-CONCENTRATE—with added CONTACT value. Contains 20% methoxychlor, plus synergized allethrin, for 1-to-7 dilution with water (or base oil)—a powerful, honest dilution that will give you real results.

For elevator, flat storage and farm bins; for accessible areas in grain elevators, flour and feed mills and cereal processing plants.

Can be safely used to spray areas over open-top bins of grain. Residue has extremely low toxicity to man or animals.

**—and the prices are low!! Compare them.**

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| 53-gal. drums | $1.80 per gal. | 53-gal. lined drums | $5.55 per gal. |
| 5-gal. drums | 1.95 per gal. | 5-gal. lined drums | 5.70 per gal. |
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president of Kipp-Kelly Ltd., where Mr. Wimbush is chief engineer, dubbed him "the original Rochdale cowboy."

* * *

Mr. Wimbush spent several years in South America and his fluent Spanish gave pleasure to many Latin-American visitors. And for this his soubriquet was changed to "the original Rochdale gaucho."

* * *

Rudi Moor, Buhler's Canadian manager, made some inquiries of Texas born Toronto friends in order to learn something about Dallas. He asked if they happened to have a small map of Texas to which he received the reply: "There is NO small map of Texas."

* * *

The newly opened Statler-Hilton Hotel in Dallas was the scene of the meeting and hotel personnel did their part in making the meeting an enjoyable affair. The hotel, newest in the Statler chain, was the subject of many appreciative comments.

* * *

**George E. Swarbreck, editor of Milling Production and managing editor of The Northwestern Miller, received special recognition from J. George Kehr, Russell-Miller Milling Co., and chairman of the AOM membership committee, from the speakers' platform for the reference he made to the work and achievements of the AOM during Mr. Swarbreck's address at the recent annual convention of the Millers National Federation at Kansas City. This writer also received comments from many of the technologists in praise of Mr. Swarbreck's presentation on the world's new flour mills before the mill executives.—PLD**

* * *

Denys Povey, a senior executive of Thomas Robinson & Son, Ltd., Rochdale, England, and Michael Fanning, newly-appointed Robinson representative in Minneapolis, were delayed in arriving at Dallas due to Atlantic storms holding up their ship. Mr. Fanning's first appearance was at the allied trades' western party in the midst of much hilarity and mirth and when asked the usual question "How do you like the United States?" replied "S' wonderful."

* * *

**One of the pleasantest receptions was given by Sterwin Chemicals Inc., with Robert Whiteside, newly returned from a European trip, heading the lineup of Sterwin hosts.**

* * *

During one late-evening gathering in the room of the Entoleter Division of the Safety Car Heating & Lighting Co., a miller could have bought any brand of European milling machinery. Among the guests were representatives of four of the major European firms. One internationally known milling engineer was observed deep in conversation with an operative miller under a picture of a bull.

* * *

Representatives of Chas Pfizer & Co., Inc.,—Robert D. Knoebel, Edward F. O'Neill, Herbert Driesbach, Harry Quinn and Charles Reynolds—performed a much-appreciated service by handing out vitamin pills to tired conventioneers.

* * *

The ladies committee was active in organizing entertainment for the wives of conference delegates and on the program was lunch at the Hotel Adolphus with attendance at the Dorothy Franey ice show afterwards. Such was the enthusiasm of the ladies that several millers and allied tradesmen were persuaded by their wives to organize dinner parties to take in the evening performances.

* * *

Fred M. Atkinson, chairman of the board of the Atkinson Milling Co., Minneapolis, was a popular conversationalist with the overseas visitors because of his wide knowledge of foreign milling practices. He was accompanied by Mrs. Atkinson who was making her first visit to Texas.

"You'll get top power for more production when you use this belting."
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INDUSTRIAL LEATHERS
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WORCESTER, MASSACHUSETTS


**INSIDE SCIENCE**

# A New Chapter In
# The Vital Story of Bread Enrichment

*by* Science Writer

**Lighting 15 Candles**

1956 is a milestone in the trend to nutritional improvement of processed foods. It marks the 15th Anniversary of white bread and white flour "enrichment" in the United States.

Back in the late 1930's millers and bakers began the restoration of vitamin $B_1$ to their foods. Later vitamin $B_2$, niacin and iron were included. Then in 1941 the concept of "enrichment" came into being: restoration of $B_1$, niacin and iron and fortification with a *higher* amount of $B_1$ than originally present in the wheat berry.

The baking and milling industries deserve the gratitude of the nation for thus insuring better foods for the nation's better health.

**What Diet Experts Say**

Physicians, dietitians, nutritionists, public health experts have supported enrichment from the start and continue to approve the practice. For example, a prominent public health nutritionist has said:

> *". . . my first and most important suggestion to you—continue not only to enrich your white bread but continue to promote enrichment until all white bread in the United States is enriched, and continue to tell the public repeatedly and more effectively about the nutritional value of enriched white bread."*

The U. S. Department of Agriculture credits the enrichment of white flour and bread for major improvements in the per capita daily food supply. Said the Department in the 1955 outlook issue of its publication "The National Food Situation"—"Enrichment and fortification of grain products continue to make an important contribution to the nutritive value of diets, especially in thiamine."

**Why Enrich?**

Americans want *white* bread to eat. Millers and bakers want *white* flour because it keeps better and bakes better. To produce this fine product, millers must process the grain to a high degree of whiteness—unavoidably milling out some values known to be necessary for good health.

Enrichment restores the important lost nutrients. It puts white flour and bread on a par with—in many cases actually ahead of—whole wheat products in their content of these factors which are necessary to good health and well-being:

| | |
|---|---|
| Thiamine (vitamin $B_1$) | Niacin (another "B" vitamin) |
| Riboflavin (vitamin $B_2$) | Iron |

**What Values Do the Enriching Vitamins and Iron Have?**

*Thiamine* is the vitamin which helps build physical and mental health. Essential for normal appetite, intestinal activity and sound nerves.

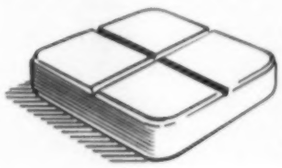
*Riboflavin* helps promote health, body tissues and proper eye function.

*Niacin* is needed for healthy body tissues. Effective in treating and preventing pellagra.

*Iron* is the mineral used in enrichment. Essential for making good, red blood and in preventing nutritional anemia.

**How Is White Bread Enriched?**

Several methods may be used. In one, bakers use enriched white flour—flour which has been enriched at the mill according to federal definitions and standards of identity or state law.



Most bakers in the United States use a tablet or wafer. One of these contains enough thiamine, riboflavin, niacin and iron to enrich 100 lbs. of unenriched white flour—sufficient to produce 155 lbs. of white bread.

One popular form of wafer is known as "Square." Shown above in actual size, the "Square" wafer has many advantages for the baker.

Square wafers are distributed in two types by leading yeast companies throughout the United States:

**Type A**—for use in bread formulas requiring 3% or more non-fat milk solids.

**Type B**—for use in bread formulas requiring less than 3% non-fat milk solids.

**How to Identify Enriched Bread**

You can't tell enriched bread by its appearance or taste. If you live in one of the 27 states having laws requiring white flour and bread to be enriched you can assume you're getting these nutritionally improved products. But all packages of enriched flour, and all wrapped enriched white bread, must show the word "enriched." Look also for a declaration on your bread wrapper similar to this:

> 8 ounces of this enriched bread supply you with at least the following amounts of your minimum daily requirements for these essential food substances: Thiamine (vitamin $B_1$) 55%; Riboflavin (vitamin $B_2$) 17.5%; Niacin (another "B" vitamin) 5 milligrams; Iron 40%.

Wherever you go, insist on bread enriched with vitamins and iron for better nutrition—for better health—for better well-being.

**Vitamins Are Made**

While vitamins occur naturally in foods, most vitamins used in food processing are manufactured through the marvels of chemistry and engineering. At the huge Roche Park plant of Hoffmann-La Roche they are manufactured *by the tons*. Using amazingly complex processes with scientific production controls and intricate equipment, the Roche people produce pure vitamins that are equal chemically and in biological activity to Nature's own. So efficient are these operations that the vitamins are sold at lower prices than if they were extracted from natural sources.

This article is published as a service to the baking industry by a pioneer in enrichment—Hoffmann-La Roche Inc. Reprints are available on request without charge. Write to the Vitamin Division, Hoffmann-La Roche Inc., Nutley 10, New Jersey.

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All-metal Purifiers type PHm installed at Ellison's Mill, Lethbridge, Canada.

"Pneu-Bell" Rollermills in the new Anaconda Mill, Sao Paulo, Brazil.

IN ANY of the five continents you can see fine mills, large and small, that have been planned and equipped from site to start-up by Robinsons. Such mills are thought out by Robinson technical experts in the closest liaison with the millers concerned and erected under the personal supervision of Robinson engineers. It's a formula that has won world-wide recognition as the basis for the ideal mill.

The new Plansifter type PSm working at Chelsea Flour Mills, London.

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# Need New Rolls?

In addition to our roll corrugating and grinding service for the flour milling industry, the Twin City Machine Co. also supplies new rolls, and we will be pleased to receive your inquiries.

**TWIN CITY MACHINE CO.**

Roll Corrugating and Grinding New Rolls

527 Second Avenue, S.E. Minneapolis Minn.

## NEW U.S. MILL

(Continued from page 4a)

grain an aspiration is introduced, removing all light impurities from the wheat automatically.

This completely automatic mill consists of four breaks and six reduction passages accomplished with new Buhler Roller Mills, Type MDD, some of them with sub-divisions. These mills are located on the first floor and elevation of the ground stocks from the mills is made pneumatically. On the second floor one Buhler high capacity sifter, Type MPAB-618, with sub-division and one Buhler triple deck purifier, Type MQRC, separate and classify the ground stocks. The installation includes a Buhler suction filter. This pneumatic handling makes it possible to locate all the milling equipment into a floor area of 22 x 24 ft. including flour bins.

Eighteen pneumatic lifts provide the complete automatic operation including the elevation of the finished products into large packaging bins. Two new Howes packers with direct connected motors provide facilities for packing the flour. The automatic suction filter with direct connected Axivane fan handles the air for the mill pneumatics including the purifier suction. The clean air can be discharged either back to the mill or to the outside. There is no spouting floor needed because five horizontal oscillating tubes provide horizontal movement of millstocks and finished products. These tubes are absolutely self-cleaning. Also, the complete spoutings are of the Buhler prefabricated all-metal type which make it possible to have a very compact installation without being crowded, and one which provides greatest sanitation.

This pneumatic mill embodies many advantages over conventional installations, the builders claim. It produces better flour, because the stocks remain cool all the time, and it greatly improves sanitation as there are no places where mill stocks can accumulate to create a source of infestation. The entire installation remains clean because of the negative suction applied by the pneumatic system. The mill has complete flexibility to meet any quality standards required.

The complete engineering, supervision of erection, and starting of this modern mill were accomplished by Sprout-Waldron engineers in cooperation with Buhler Brothers.

——BREAD IS THE STAFF OF LIFE——

## Hoffmann-La Roche Vitamin Division Promotions Announced

NUTLEY, N.J.—Robert W. Smith has been named sales manager of the Hoffmann-La Roche bulk vitamin division, announces Paul J. Cardinal, vice president in charge of the division. Mr. Smith assumes the position formerly held by the late Chester C. Robinson.

Ralph C. Christiansen has been promoted to special markets manager. Richard D. Zucker, assistant to the vice president since August, 1953, and who retains that title, will devote increased attention to direction

*For self-rising meals and flours...*
*For every processing need...*

Treated free-flowing

# Bicarbonate of Soda

(U.S.P. BICARBONATE OF SODA WITH TRI-CALCIUM PHOSPHATE ADDED)

from America's most experienced supplier

EVERY household knows the famous "Arm & Hammer" and "Cow Brand" Baking Soda. And most millers know that Church & Dwight treated free-flowing soda is produced with the same care and under the same rigid controls to make it the finest product available.

You may not know, however, that free consultation service is available to help you get the best results with our product from the very beginning. Why not take advantage of it?

**Church & Dwight Co., Inc.**

70 Pine Street, New York 5, N. Y.

Phone: DIgby 4-2181

of sales control, Mr. Cardinal announced.

Mr. Smith has been with Hoffmann-La Roche since December, 1940, joining as a medical representative of the pharmaceutical division in Washington. Three years later he succeeded A. W. Larson as the company's special representative in Washington for government agency contacts. In 1945 the Washington office was discontinued and Mr. Smith took charge of the Chicago office operated by the Roche pharmaceutical division. In April, 1950, he was brought to the New York area to be divisional manager of the metropolitan division responsible for sales of Roche pharmaceutical products in Manhattan and the Bronx.

Born in Clearfield, Pa. and a graduate of Philadelphia College of Pharmacy and Science, Mr. Smith has had prior experience in retail drug channels. The Smith family resides at Montclair, N.J.

Mr. Christiansen, who observed his twenty-fifth anniversary with Hoffmann-La Roche in January, was transferred from the pharmaceutical division to the vitamin division in 1947 and five years later was appointed manager of sales to the margarine industry. Now as special markets manager his responsibilities have been enlarged. He and his family live at Upper Montclair, N.J.

Mr. Zucker has been with Roche since 1939 and with the vitamin division since its field staff was formed in 1942. He and Mrs. Zucker reside at Upper Saddle River, N.J.

—BREAD IS THE STAFF OF LIFE—

### FARM PRICE INDEX

WINNIPEG—Canada's index number for farm prices in March, on the 1935-39 base, was estimated at 219.4, an increase of 1.1 over February.


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INDUSTRIAL AND AGRICULTURAL CHEMICALS

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VAULT
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• MORE ECONOMY

Bromotox, a mixture of ethylene dibromide and methyl bromide, is an effective, safe and economical space fumigant. The stronger odor and lower dosage requirements of Bromotox result in greater killing power, increased economy and maximum safety. It is longer lasting, more penetrating and leaves no residual odor. Bromotox allows positive control of granary and rice weevils, Angoumois grain moth, confused flour beetle, Mediterranean flour moth, raisin moth, cheese mites and many other pests infesting grain, flour, rice, cheese and dried fruits. Available in cans packed twelve per case as well as 10, 50, 120 and 170 pound cylinders.

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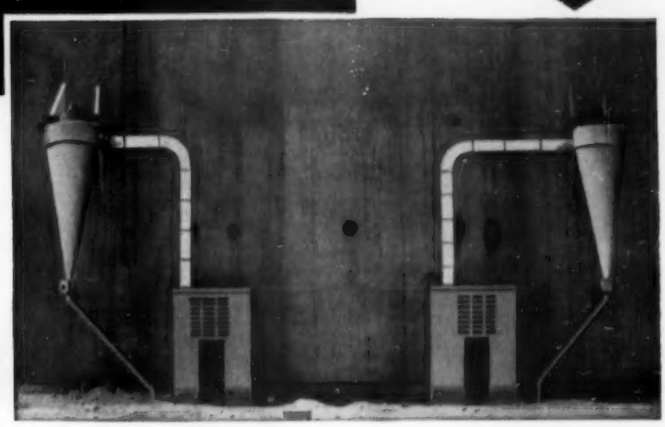
One of the World's Largest Grain Elevators—C-G Grain Co. 20-million bushel house near Wichita, Kansas—equipped with the Forster "FORNADO" Dust Control twin installation pictured below. A 450-foot dust-free tunnel.



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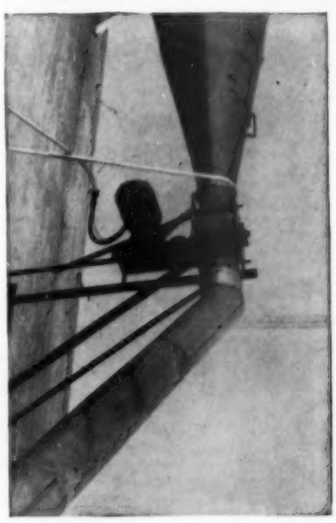
FORSTER
FORNADO *Dust Control* SYSTEM
top efficiency at lower operating cost



The Forster AIR-LOCK IS ONE reason for high efficiency of the Forster "FORNADO" dust system. Installation pictured above returns recovered material from receiving unit to stock, still keeping a positive air seal on this highly efficient dust control system.

AT LAST! Here's a dust control system that is simple and efficient with all operating savings from modern engineering and design. It is the new Forster FORNADO, an integrated pneumatic system that fits both large and small plants.

When you see it, you will recognize at once that FORNADO is miles ahead of the field because it is so compact. The unit consists of a skillfully designed collector, a high static precision fan connected directly to the motor and an efficient airlock.

The secret of its success is the carefully balanced capacities of each part of the unit. And the secret of its lower cost is simple installation, big power savings and easy maintenance. FORNADO has been tested and proved in installations like that in the big C-G grain elevator pictured above.

It's easy to modernize your present system and get the extra efficiency and low operating costs of top-rated FORNADO. Let Forster engineers analyze your problem without cost to you.

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*Machines for Modern Milling*

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A battery of six DAY bulk bins with special hopper arrangements

# DAY BULK MATERIAL BINS

The importance of proper bulk material storage in your plant operation calls for DAY bulk bins. They provide economical bulk facilities. Vertical or horizontal styles are available for any plant layout. Vertical bins available from 3 to 12 feet in diameter; up to 100 feet high. When headroom is limited DAY horizontal bins answer this problem.

Bins of special height and length or batteries to suit production requirements can be furnished. Built and shipped in sections which are erected by bolting together, DAY bins need no field riveting, soldering or welding. A complete line of product flow and blending equipment accessories will further solve material handling problems.

**To improve your plant's bulk storage and handling write toDAY and request Bulletins 529 and 549.**

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## *Correspondence . . .*

**To the Editor:**

Dear sir:

Letters from various offices of the U.S. Department of Agriculture's Commodity Stabilization Service, on the subject of "methyl bromide residues" are being widely circulated, and quoted in trade publications. These letters suggest that grain should not be treated more than three times with methyl bromide, or if its fumigation history is not known, should not be treated at all.

It appears that many who do not fully understand the Miller Amendment to the Federal Food & Drug Law are misconstruing these letters. The Miller Amendment provides for tolerances of pesticide residues to be set by the FDA on all raw agricultural commodities. Between now and July 22, 1956, such tolerances will be established on all chemical components of all grain fumigant mixtures. It just happens that methyl bromide has received its tolerance ahead of the other commonly used grain fumigant chemicals.

These tolerances are not necessarily set at a point above which the residues will be harmful to people consuming the food. They are primarily set upon what may be expected to be the normal residue following normal treatment; and apparently somebody, somewhere along the line in government or industry erroneously concluded that three fumigants with methyl bromide represented normal treatment of grain.

The fact that the residue tolerance is set on the basis of normal treatment rather than toxicity, or harmful effects upon people is illustrated by the variation in the tolerance on the various commodities. The tolerance on apples, pears and quince is 5 p.p.m., on egg plant, onions and tomatoes it is 20 p.p.m., on beets, rutabagas and turnips it is 30 p.p.m., on grain it is 50 p.p.m., on potatoes and sweet potatoes, 75 p.p.m., and on cotton seed it is 200 p.p.m.—all of which represents what is alleged to be normal residues following normal treatment.

As stated earlier, methyl bromide happens to be among the first of the fumigants to receive its tolerance under the Miller Amendment. Between now and July 22, 1956, residue tolerances will be set for such commonly used grain fumigant chemicals as carbon tetrachloride, ethylene dichloride, carbon bisulfide, and others. As these tolerances are established, you may expect the tolerance to also set a limit on the extent of the use of some of these materials. The ultimate effect of the Miller Amendment will be to require more care in the use of fumigants on grain, regardless of the fumigant that may be involved.

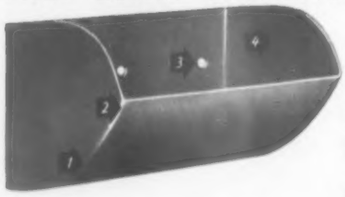
Very truly yours,

**J. Carl Dawson**
**J. Carl Dawson & Associates**
**St. Louis, Mo.**

## *Postscript from Dallas . . .*

"Seems like Beamish is taking wide advantage of his official greeting duties."


## First Choice Wherever Grain is Handled

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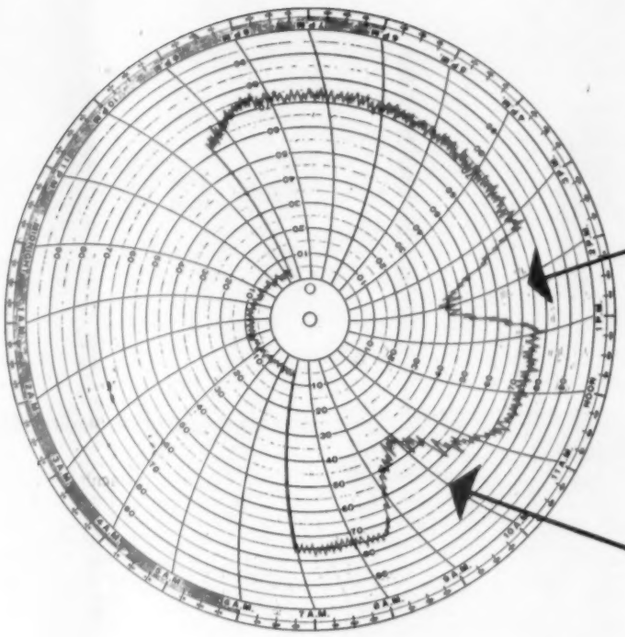

# these mean trouble...

IT MIGHT BE a broken belt, a torn sieve, or a choke-up somewhere in the spouting.

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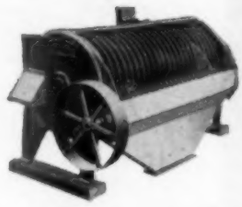

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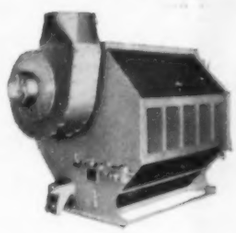
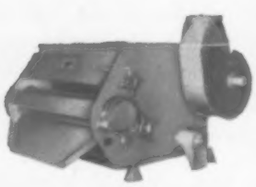
**Using the right machine in the right place**



CARTER DUO-ASPIRATOR



11X60 CARTER
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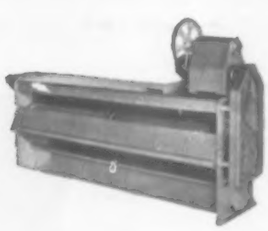
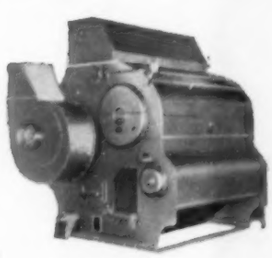


NO. 1 CARTER
PRECISION GRADER

CARTER MILLERATOR



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